FAA-S-2206a
Amendment I
September 25, 1972

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION SPECIFICATION

This amendment forms a part of FAA-E-2206a dated 14 February 1972.

Page 1: Remove in its entirety and substitute therefor Page 1 of this amendment.

Page 2: Remove in its entirety and substitute therefor Page 2 of this amendment.

Page 3, Paragraph 3.1.2.1.7: Add after last sentence, "If this length is to be exceeded, special arrangements will be coordinated by the regional office and the local TELCO representatives.

Page 5, Paragraph 3.2.15: Add the word "Type" after the word "Director."

Paragraph 3.2.28: Add the word "(LS)" after "Receiver-Transfer."

Paragraph 3.2.29: Add sentence, "(See paragraph 3.3.3.16.4)."

Add paragraph 3.2.30, Locking Pushbutton: A switch which when depressed mechanically locks or latches in the depressed position. Add paragraph 3.2.31, Non-Locking Pushbutton: A switch which when depressed does not mechanically latch in the depressed position and will return to the initial position when released. This switch may be called a hold down switch.

Page 6, Paragraph 3.3.2, Sentence 8: Add "(LS)" after "Receiver-Transfer."

Page 7: Remove and substitute therefor Page 7 of this amendment.

Page 8: Remove and substitute therefor Page 8 of this amendment.

Page 9, Paragraph 3.3.2.10, Statement 3: Delete words "a call over Type 3, 4, 5, or 6," and insert therefor "override."

Page 10, Paragraph 3.3.2.12: Add sentence, "Note: The location of the backlighting control at the Watch Supervisory position will be determined locally and specified in the order."

Page 11, Paragraph 3.3.2.13.2, Statement 5: Delete "Radio."

Paragraph 3.3.2.14.1: Add sentence, "In those cases where any function is not required by the Government, that key position shall be left blank.

Page 13, Paragraph 3.3.2.18: Delete and re-insert as paragraph 3.3.3.18.1.

Paragraph 3.3.2.19.6: Delete the word "maximum" substitute therefor "normal." After last sentence add, "In all cases the recording shall be taken from the voice coil side of the speaker amplifier after the volume control circuitry."

Page 14, Paragraph 3.3.3: First sentence remove word "and/," and add; 8a Position TELCO Speaker, 3.3.3.8.1; and 19 Automatic Radio Feature, 3.3.3.19.

Page 15, Paragraph 3.3.3.1: Add following: "(See Chart 1 and 2)."

Page 15, Paragraph 3.3.3.3: Delete Table No. 1. Add:

No. of Keys	Type of Keys	Face Plate Height	Face Plate Width	Console Cut-Out Height	Console Cut-Out Width	Console Cut-Out Depth
12	635	6.625"	2.627"	6.250"	2.469"	4.000"
18	635	6.625	3.752	6.250	3.594	4.000
24	635	6.625	4.877	6.250	4.719	4.000
36	635	6.625	7.127	6.250	6.969	4.000
50	652	6.625	9.188	5,850	8.750	4.300
Dial		6.625	3.980	6.250	3.866	4.300
Speaker	106 series	5.500	5.500	5.400	5.400	4.625
Speaker*	106 series	6.000	6.000	5.438	5.438	4.625
Jack Panel		1.430	7.680	1.250	6.370	6.700

Page 17, Paragraph 3.3.3.6: Add after last sentence, "Those positions not requiring the Radio (RDO) key may be provided the automatic radio feature (3.3.3.19).

Paragraph 3.3.3.6.2, Subparagraph 2: Delete "an" and substitute therefor "a locking."

Page 18, Paragraph 3.3.3.10, Sentence 3: Delete "position normal" and substitute therefor "normal position." Delete last two sentences and substitute therefor: "In those cases where the coordinator position PTT feature is activated both the auxiliary lamp and buzzer shall be energized by an incoming override call to the position. An exception shall be such that the buzzer is not energized when an override call is directed to the position while another override call is active to that position."

Page 20, Paragraph 3.3.3.16.4: Insert the word "Type" after "Call Director."

Paragraph 3.3.3.18: After "order," insert the words "(See Figure 12)."

Page 21, Paragraph 3.3.3.18.3: Delete in its entirety and substitute therefor:

3.3.3.18.3 Circuit No. 3 - Non-Selective Circuit.- A non-selective "private" line circuit shall be provided to the system as an option to the Government. The non-selective (Type 3) line circuit shall normally be used for communication between the facility and specified distant facilities. In certain cases the Type 3 line circuit shall be provided for intrafacility communication at the option of the Government. Signalling shall be provided on the Type 3 line circuit with the following options.

Incoming	Outgoing
Automatic, voice, or manual ring down or none	Automatic or voice or manual ring down or none

The optional signalling combinations and usages are shown in Chart 12. The quantity of, signalling options of, and positions requiring the Type 3 line circuit will be specified in the order.

Figure 3 is a diagram of the Non-Selective (Type 3) line circuit.

Page 22, Paragraph 3.3.3.18.4: Delete in its entirety and substitute therefor:

3.3.3.18.4 Circuit Nos. 4 and 5 - Selective Signalling (SS-1A) Circuits.- Two (2) Selective Signalling circuits shall be provided to the system as an option to the Government. These line circuits will be referred herein as the SS-1A Voice Page (Type 4) and the SS-1A 2-Way (Type 5). The SS-1A circuits will be used for communication within the interphone system to and from remote facilities external to the system and other interphone systems. The SS-1A circuit shall optionally be used for intrafacility communication when so required. The SS-1A line circuit shall be electrically connected to a position by operation of the associated line select key. Signalling shall be required depending upon the far-end equipment terminations. The optional types of signalling which shall be provided to the SS-1A line circuits are as follows:

Type	Incoming	Outgoing
Voice Page	Voice or Manual Ring Down	Voice, Manual Ring Down, Dial
2-way	Dial	Dial

Optional signalling combinations and usages are shown on Chart 12. Optional inter-area SS-1A switching equipment shall be provided whereby several SS-1A line circuits may be interconnected. The inter-area connection shall be enabled by dialing a connect code and further signalling shall be required to signal any particular distant location. The quantity of, signalling of, and positions requiring the SS-1A (Type 4 and Type 5) line circuits will be specified in the order.

Figures 4 and 5 are diagrams of the SS-1A Voice Page (Type 4) and SS-1A 2-Way (Type 5) line circuits.

Paragraph 3.3.3.18.7: In the first sentence delete words "two-way communication or one way incoming." Sentence 2: Delete the word "automatic."

Page 23: 3.3.3.19 Automatic radio feature.- The automatic radio feature may be provided to the system as an option to the Government in those cases where the Radio "RDO" Key is not specified to be included at a position in the order. This feature shall automatically connect the instrument jacks to the radio circuit when no interphone circuit is active to the position. The selection of any interphone circuit at that position shall activate the automatic radio feature to automatically transfer the incoming radio calls to the position TELCO speaker. When all interphone circuits to this position are released the automatic radio feature shall again automatically transfer the incoming radio calls to the position instrument jacks.

Page 28: Replace with amended Page 28.

Page 29: Replace with amended Page 29.

Page 30: Replace with amended Page 30.

Page 32: Replace with amended Page 32.

Page 37: Replace with amended Page 37.

Page 38: Replace with amended Page 38.

Page 39: Chart 3 Under: B connected to aircraft.

Overrides B and column B remove from, 1. the letter "0" subsitute therefor "L".

Page 47: Add Chart 11 (enclosed).

Page 48: Add Chart 12 (enclosed).

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FAA-S-2206a
February 14, 1972
SUPERSEDING
FAA-S-2206 2/10/66

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION SPECIFICATION

AIR TRAFFIC CONTROL INTERPHONE SWITCHING SYSTEM

(INTERMEDIATE TYPE - 301A)

1. SCOPE

1.1 Scope.- This specification defines an Interphone Switching System to be used in an air traffic control facility. This specification describes a Western Electric Type 301A Interphone Switching System (WECO Designation J-53048). The system may be used in TRACONs, ATC towers, common IFR rooms, RAPCONs (Radar Approach Control), and small air traffic control centers. The system is a "Direct Access Type System," requiring a pick up key for each circuit appearing at each position. Although the system is designed to provide voice communication for a maximum of 42 control positions, facilities having more than 30 positions may find this system restrictive in operational flexibility as well as being economically expensive. Under certain conditions this system may be expanded beyond the normal 42 maximum position capability. This specification, as compiled, should be used for leased services only. The equipment, features, options, apparatus, and hardware, position-to-position and facility-to-facility relationship, circuit terminations, and types of signalling, etc., are stated herein. For standardization in all 301A switching systems installed in Government facilities only those features described herein can be ordered without prior Washington headquarters coordination and approval.

2. APPLICABLE DOCUMENTS.- The following FAA documents form a part of this specification and are applicable to the extent specified herein.

2.1 Federal Aviation Administration Handbooks.-

6690.1	Operational Description of the 301A Switching System
4441.3	Procedures for Leasing Commercial Communication Services

4441.9 Practices Concerning Leased Telecommunication Services

2.2 Federal Aviation Administration Specifications.-

FAA-E-2312 Console, TRACON/RAPCON Modular

(Copies of FAA Handbooks may be obtained from the Federal Aviation Administration, Public Document Inspection Facilities, HQ-405, Washington, D. C., 20591. Requests for FAA Specifications should be marked for the attention of FI-110. Requests should fully identify material desired, i.e., Specification number, Handbook number, dates, amendment numbers, etc. Also, the request should state what use will be made of these documents.)

3. REQUIREMENTS.-

3.1 General requirements.- The contractor shall provide all engineering, management, services and materials necessary to design, fabricate, test, deliver, install and maintain the equipment required by this specification.

3.1.1 Equipment and services to be furnished by the contractor.- Provisions of the system with the non-optional and optional features, when specified, shall be made available when ordered. Leasing of the interphone system shall be in compliance with FAA Handbook 4441.3, Procedures for Leasing Commercial Communications Services, FAA Handbook 4441.9, Practices Concerning Leased Telecommunications Services, and other current, appropriate Government regulations and tariffs where applicable. Only those features described herein shall be provided unless prior request for modifications have been coordinated and approved by the Washington headquarters.

3.1.2 Equipment and services to be furnished by the Government.- The Government will provide the following:

3.1.2.1 Building facilities.-

3.1.2.1.1 Space.- Floor space will be reserved for the equipment. This space will normally be an isolated area specifically designated for leased telephone equipment. The following is the floor space normally provided for the maximum number of positions indicated:

Positions	Floor Space (Minimum)
Up to 5	120 square feet
6 - 10	210 square feet
11 - 14	300 square feet
15 - 20	550 square feet
20 - 30	800 square feet
30 - 42	1100 square feet

11.	Voice data collection	3.3.2.11
12.	Variable backlighting	3.3.2.12
13.	Status lamps	3.3.2.13
14.	Common function module	3.3.2.14
15.	Preemption	3.3.2.15
16.	Remote alarm feature	3.3.2.16
17.	Sidetone	3.3.2.17
19.	FAA/TELCO interface	3.3.2.19
20.	Emergency backup power	3.3.2.20

3.3.2.1 Position pilot lamp.- A position pilot lamp shall be provided and shall be located on the common function key module (3.3.2.14) in the designation area for the "Release Key" (3.3.2.5). This lamp shall "FLASH" when an incoming interphone call is directed specifically to the position. The lamp shall be restored to the "OFF" condition when the appropriate key is operated at the position to answer the call. The position may be optionally wired so that the lamp will "FLASH" when a call is received by the system over specified trunks.

3.3.2.2 Jack panel assembly.- A jack panel assembly shall be provided each position. This assembly shall accommodate two sets of multiple jacks, one set designated for the controller, labeled CONT. and painted green, while the other set shall be designated for the instructor, labeled INSTR. and painted yellow. In addition, the panel shall contain a "Receiver-Transfer" (LS) key (3.3.2.8) and a variable backlighting control (3.3.2.12).

3.3.2.3 Push-to-talk (PTT) feature.- A PTT feature shall be provided and shall be activated by a switch in either the position instrument or the footswitch. The PTT feature shall be in accordance with Chart No. 3.

3.3.2.4 Instrument disconnect.- The removal of all instruments from both position jack panel shall establish the following conditions:

1. Incoming radio, override, and voice page calls to the vacated position shall appear in the position TELCO speaker.

2. The "buzzer cutoff" key shall remain functional, i.e., the position buzzer shall energize on an incoming call unless the buzzer is deactivated by the "buzzer cutoff" switch.

3. The position pilot lamp and override lamp shall be activated when a call is directed to the vacated position.

4. The individual status lamps on incoming calls shall be activated.

5. "Receiver-Transfer" (LS) key shall become inoperative.

Removal of the position instruments from the jack panel shall release any override radio or interphone circuits selected by the position as well as render all keys inoperative except as stated above.

3.3.2.5 Release key.- A non-locking pushbutton key shall be provided in the common function module called the release key. The release key at any position when depressed shall disconnect any selected interphone circuit active to the position except active override circuits. At those positions provided the Radio (RDO) key (par. 3.3.3.6) depressing the release key shall transfer all selected radio circuits to the position TELCO speaker. At those positions provided the automatic radio feature (par. 3.3.3.19) depressing the release key shall also transfer all selected radio circuits from the position TELCO speaker to the position instrument jacks. The switchhook provided to the telephone console shall perform the same functions as the release key when operated closed.

3.3.2.6 Headset/loudspeaker (HS/LS) key.- A "HS/LS" non-locking key with its associated status lamp shall be provided on the common function module. It shall be used to transfer incoming override calls from the position TELCO speaker to the position instrument jacks and vice versa. Successive operation of this key shall transfer these incoming calls between the position instrument jacks and the position TELCO speaker. Incoming override calls to the position TELCO speaker must be transferred to the position instrument jacks for answering. A "STEADY ON" status lamp shall indicate that the above calls have been directed to the position TELCO speaker. When the position is vacated, i.e., position instruments removed from the position jack panel, the above incoming calls shall be directed to the position TELCO speaker. The Watch Supervisor's position shall not have this feature, normally, the switchhook of the Telephone Console shall perform the same function as the "HS/LS" key when operated to the active position.

3.3.2 7 Hold key.- A non-locking key shall be provided and located on the common function module. It shall be used to establish a "hold" condition on Central Office (CO) or PBX circuits. When this "HOLD" function key is used, any other interphone or radio circuit may be selected. A "hold" condition can be established on more than one CO or PBX line at any one position. Reoperation of the associated line pick up key re-establishes the circuit connection and removes the "hold" condition from that circuit. A circuit in a "hold" condition may be picked up by another position.

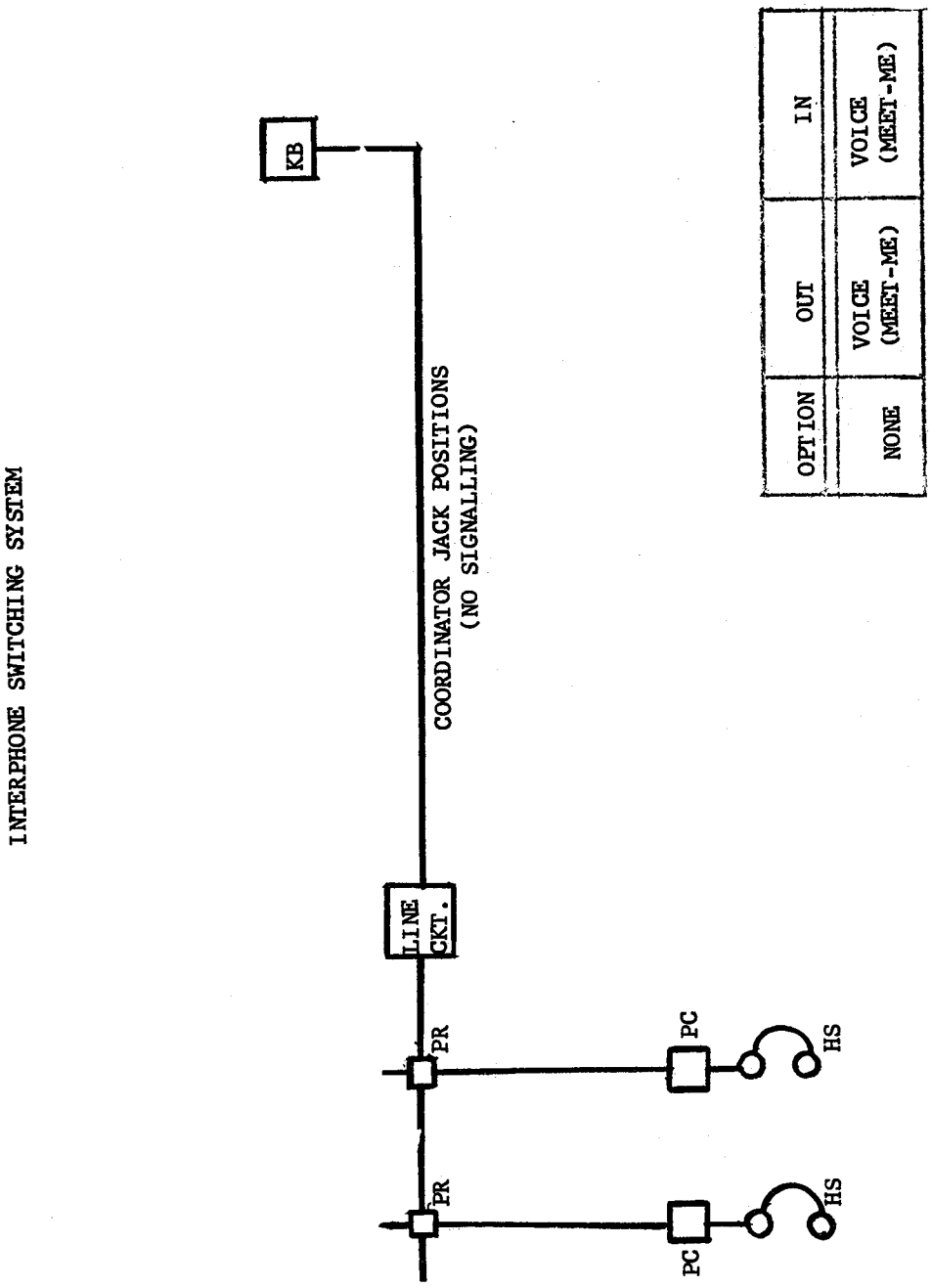


FIGURE 2

CIRCUIT NO. 2 - "C" LOCAL COORDINATOR

301A SWITCHING SYSTEM

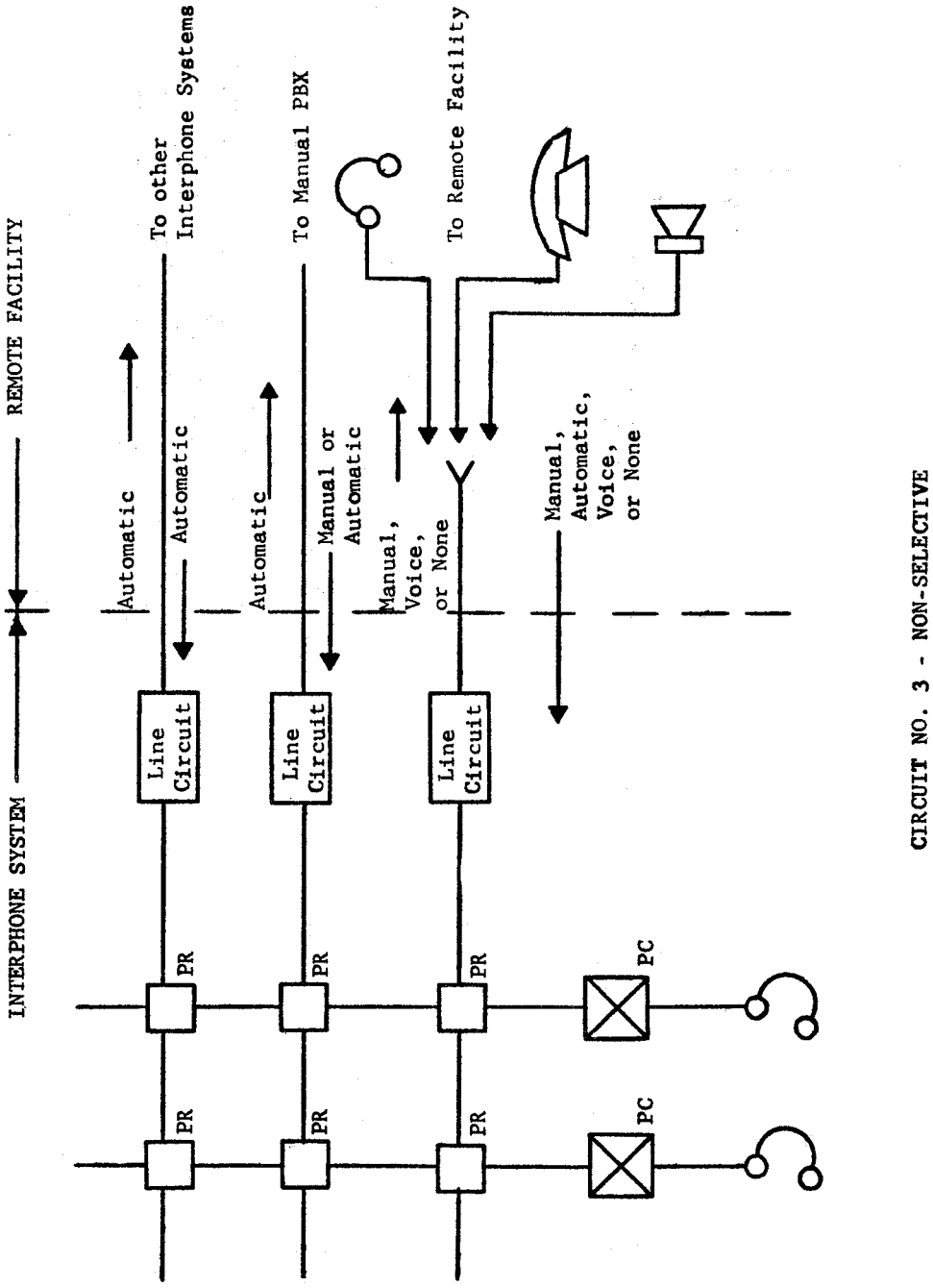
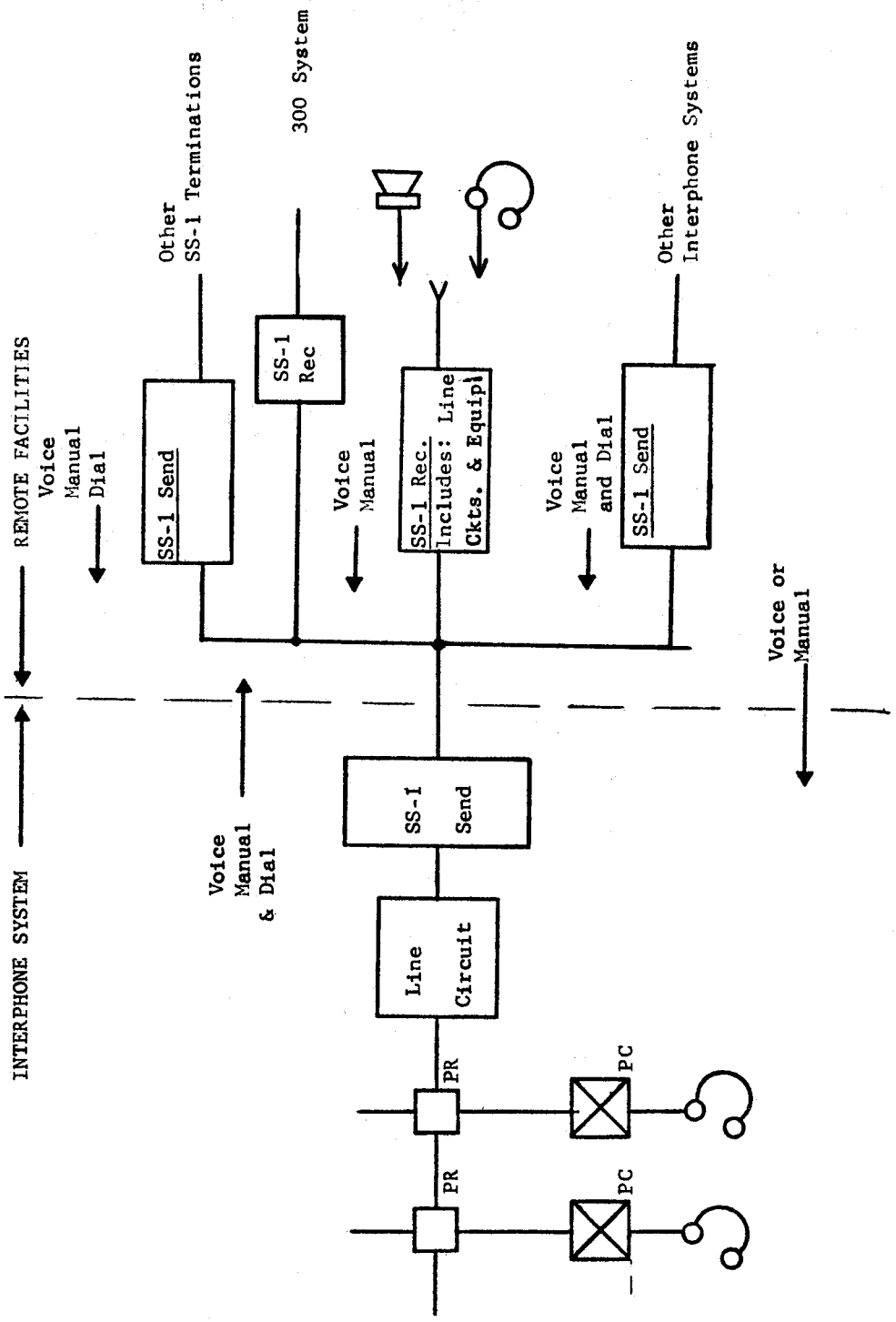


Figure 3

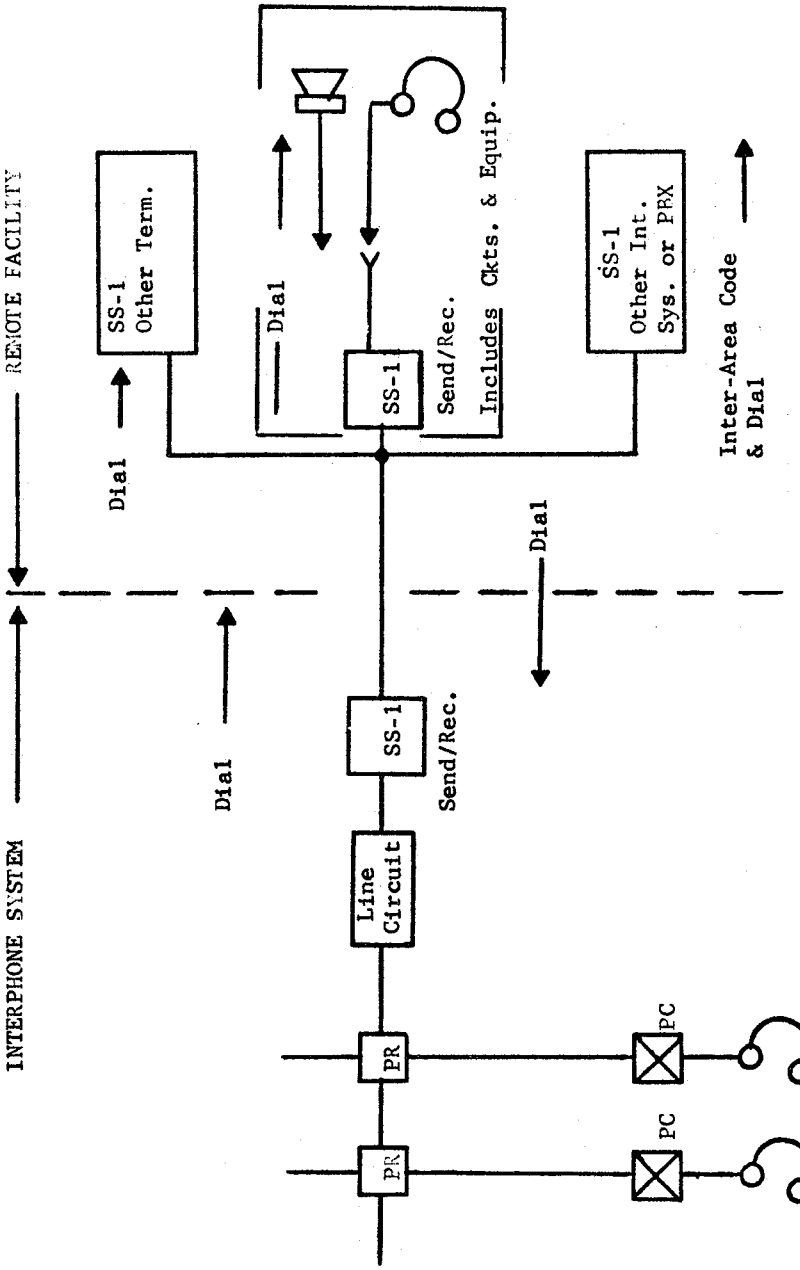
301A SWITCHING SYSTEM



CIRCUIT NO. 4 - SELECTIVE SIGNALLING - (VOICE PAGE) SS-1A

Figure 4

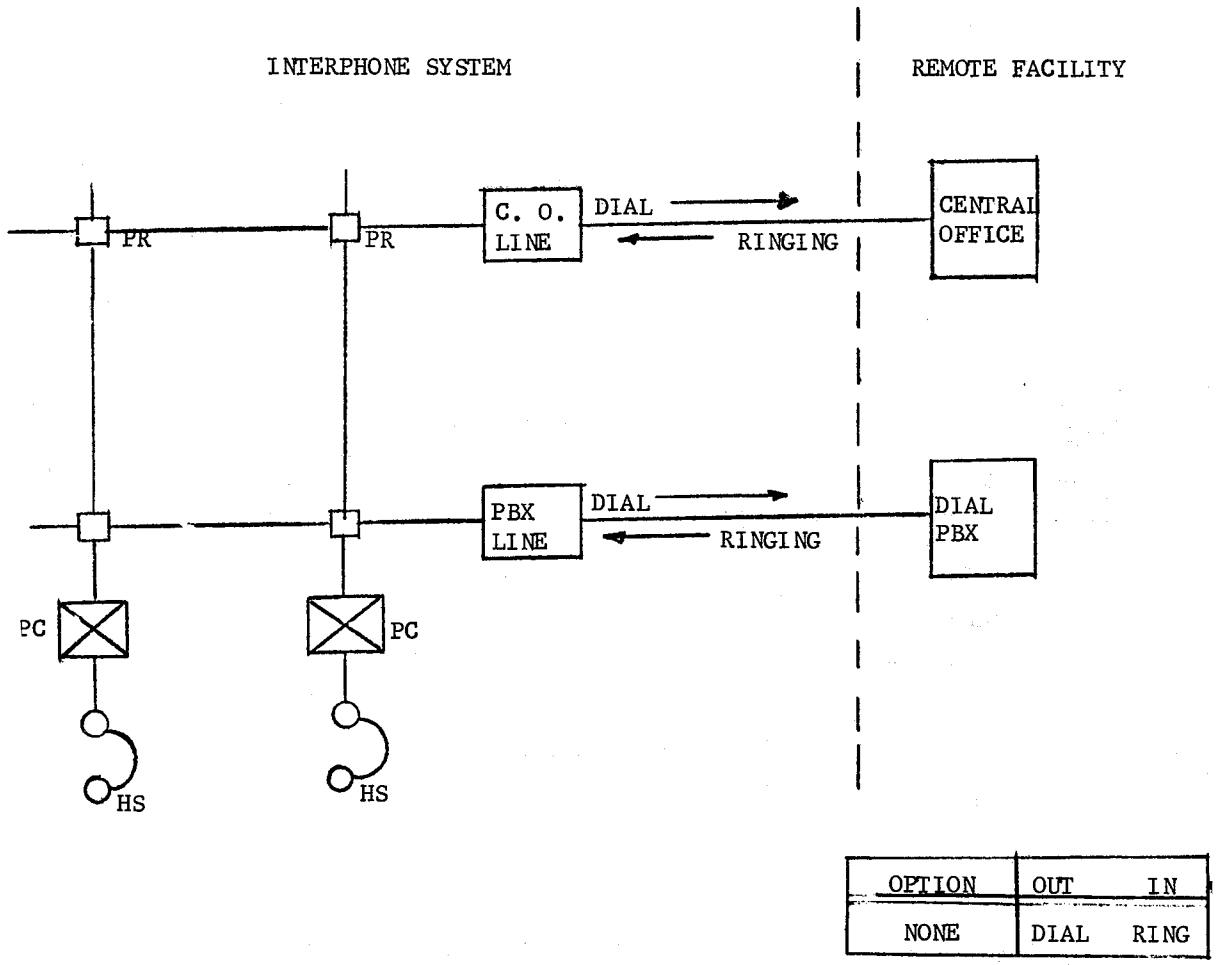
301A SWITCHING SYSTEM



CIRCUIT NO. 5 SELECTIVE SIGNALLING (2-WAY) SS-1A

Figure 5

INTERPHONE SWITCHING SYSTEM



OPTION	OUT	IN
NONE	DIAL	RING

FIGURE 6
CIRCUIT NO. 6 - CENTRAL OFFICE LINE OR PBX EXTENSION

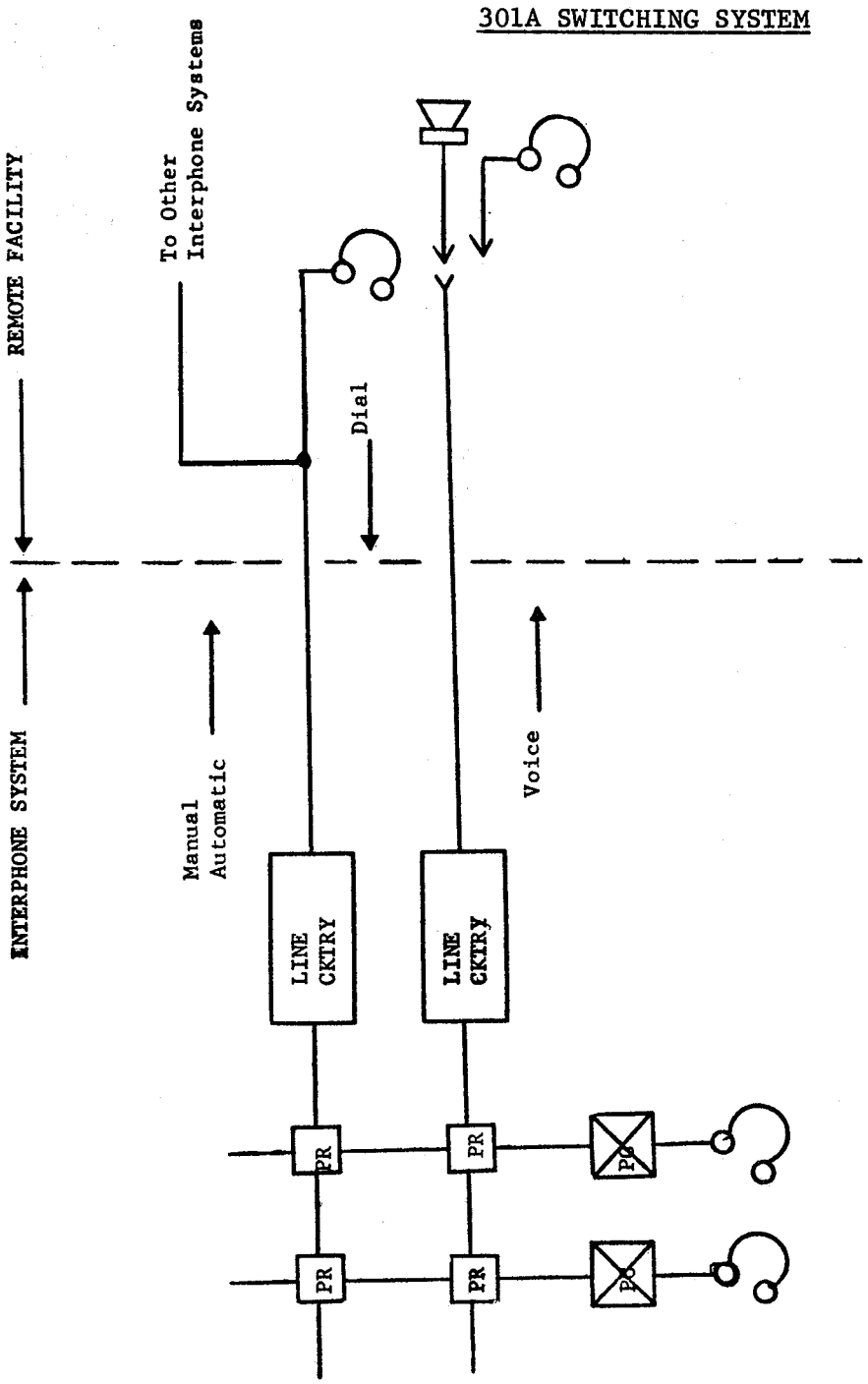

301A SWITCHING SYSTEM
REMOTE FACILITY
To Other Interphone Systems
Dial
INTERPHONE SYSTEM
Manual Automatic
Voice
LINE CKTRY
LINE CKTRY
PR
PR
PR
PR
PC
PC
CIRCUIT NO. 8 LOCAL DIAL LINE

Figure 7

ATCT POSITION EQUIPMENT SHEET FAA-S-2206a

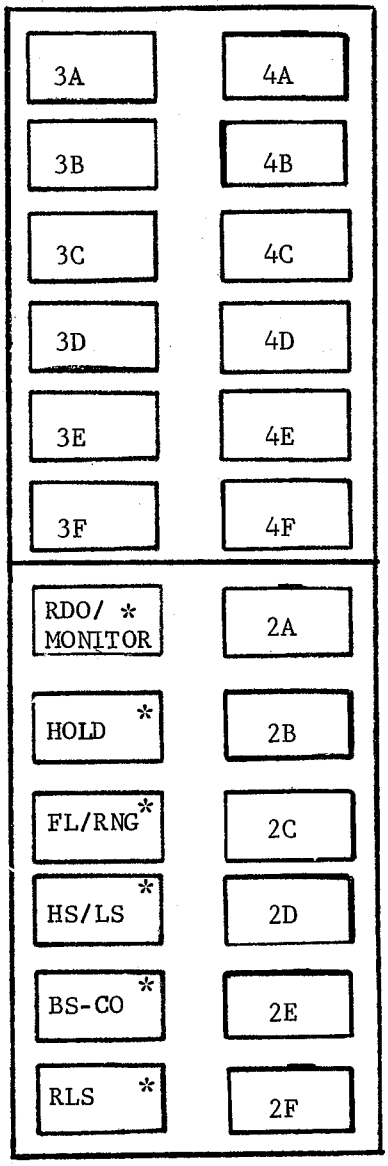
FACILITY _____ DATE _____

TELCO POSITION _____ RADIO ACCESS _____ PAGE _____

FAA POSITION _____ PREEMPTION CTL _____ DIAL _____

SS-1A RECEIVE CODE _____ POSITION MONITOR _____

LOUDSPEAKER _____ RECORDING _____



KEY	CIRCUIT
2A	
2B	
2C	
2D	
2E	
2F	
3A	
3B	
3C	
3D	
3E	
3F	
4A	
4B	
4C	
4D	
4E	
4F	

* If this feature is not required at the position, the key location shall remain blank and perform no function.

CHART - 1

FAA-S-2206a ATCT POSITION EQUIPMENT SHEET

FACILITY _____ DATE _____

TELCO POSITION _____ RADIO ACCESS _____ PAGE _____

FAA POSITION _____ PREEMPTION CTL _____ DIAL _____

SS-1A RECEIVE CODE _____ POSITION MONITOR _____

LOUDSPEAKER _____ RECORDING _____

1A	RDO/ * MONITOR	2A	3A	4A	5A	6A
1B	HOLD *	2B	3B	4B	5B	6B
1C	FL/RNG *	2C	3C	4C	5C	6C
1D	HS/LS *	2D	3D	4D	5D	6D
1E	BS-CO *	2E	3E	4E	5E	6E
1F	RLS *	2F	3F	4F	5F	6F

KEY	CIRCUIT	KEY	CIRCUIT	KEY	CIRCUIT
2A		3E		5C	
2B		3F		5D	
2C		4A		5E	
2D		4B		5F	
2E		4C		6A	
2F		4D		6B	
3A		4E		6C	
3B		4F		6D	
3C		5A		6E	
3D		5B		6F	

* If this feature is not required at the position, the key location shall remain blank and perform no function.

CHART - 2

SIGNALLING COMBINATIONS

In	Out	Alpha-Designation	Abbreviation (In/Out)
Voice	Voice	A	V/V
	Dial	B	V/D
	Automaic	C	V/A
	Manual	D	V/M
	None	E	V/N
Dial	Voice	F	D/V
	Dial	G	D/D
	Automatic	H	D/A
	Manual	J	D/M
	None	K	D/N
Automatic	Voice	L	A/V
	Dial	M	A/D
	Automatic	N	A/A
	Manual	P	A/M
	None	Q	A/N
Manual	Voice	R	M/V
	Dial	S	M/D
	Automatic	T	M/A
	Manual	U	M/M
	None	V	M/N
None	Voice	W	N/V
	Dial	X	N/D
	Automatic	Y	N/A
	Manual	Z	N/M
	None	a	N/N
PBX or CO Ringing	Dial	b	R/D

CHART 11

301A SYSTEM

TYPE	CIRCUIT NAME	SIGNALLING	USAGE	IN/OUT	NOTES
1	Local Override	A	Facility Intercommunication	V/V	
2	Local Coordinator	a	Sector Supervision	N/N	
3	Non-Selective	A	Facility to Remote	V/V	
		D	Facility to Remote	V/M	
		E	Facility to Remote	V/N	
		L	Facility to Remote	V/N	
		N	Facility Interphone	A/A	
			Facility to other switching systems	A/A	
			Facility to Manual PBX	A/A	
		P	Facility to Remote	A/M	
		Q	Facility to Remote	A/N	
		R	Facility to Remote	M/V	
		T	Facility to Remote	M/A	
			Facility Interphone	M/A	
			Facility to Manual PBX	M/A	
		U	Facility to Remote	M/M	
		V	Facility to Remote	M/N	
		W	Facility to Remote	N/V	
		Z	Facility to Remote	N/M	
		a	Facility to Remote	N/N	
4	Selective (Voice Page)	A	Facility to Remote SS-1	V/V	or other switching systems
		B	Facility to 300 Systems	V/D	
		D	Facility to Remote SS-1	V/M	or other switching systems
		R	Facility to Remote SS-1	M/V	or other switching systems
		S	Facility to 300 Systems	M/D	
		U	Facility to Remote SS-1	M/M	or other switching systems
5	Selective (2 Way)	G	Facility to Remote	D/D	
6	CO or PBX	b	Facility to CO/PBX	M/D	
8	Local Dial	F	Facility to Local	D/V	
		H	Facility to Local	D/A	
		J	Facility to Local	D/M	
9	Hot Line	A	Facility to Remote	V/V	
10	Remote Coordinator	a	Remote to Facility	N/N	

CHART 12

FAA-S-2206a